



Competency 1.3 Industrial hygiene personnel shall demonstrate a working level knowledge of investigative techniques used to recognize exposures to health stressors which may be found in complaint reports and/or signs and symptoms of health decrement.

1. Supporting Knowledge and Skills

- a. Discuss common signs and symptoms of health decrement.
- b. Explain the following basic medical terminology associated with health decrement:
 - Asbestosis
 - Mesothelioma
 - Pneumoconiosis
 - Dermatitis
 - Cumulative Trauma Disorder
 - Chronic Beryllium Disease
- c. Discuss the following basic epidemiological study methodologies and give examples of how each is used:
 - Retrospective
 - Prospective
 - Case control
 - Cohort
- d. Using a complaint report, identify potential health stressors to be investigated.
- e. Discuss the investigative techniques used to evaluate health and safety complaints.



2. Recommended Reading

Review

- Patty's *Industrial Hygiene and Toxicology*, 4th Edition, Volume I, General Principles, Chapters 10 ("Occupational Dermatoses") and 11 ("The Pulmonary Effects of Inhaled Inorganic Dust"), and 26 ("Occupational Epidemiology: Some Guideposts"), Clayton & Clayton.
- *Occupational Diseases: A Guide to Their Recognition*, U.S. Department of Health, Education, and Welfare.

3. Summary

When the American worker was regularly exposed to high concentrations of hazardous agents, the identification of characteristic signs and symptoms of exposure to these agents may have been possible. Fortunately, with the general improvement in employee exposure control in the country, the progress of disease to the point of development of classic signs is rare. As a consequence, most classic occupational diseases discovered today will be the result of egregious past failures of surveillance. Because of the generally low exposure levels found in current work environments, most symptoms or signs of potential exposure seen in today's work places will be of a general or equivocal nature. Miscellaneous aches and pains such as headache, fatigue, sensory irritation, etc., that could potentially indicate the first stages of occupational illness in a susceptible individual, may have some other cause totally unrelated to work.

One of the reasons for preplacement examinations is the identification of medical conditions that could preclude exposure to hazardous agents. Medical surveillance intended to identify the earliest signs of damage is performed on personnel with a pattern of exposure to significant quantities of hazardous agents, and if these signs are identified, the employee may be removed from the exposure situation before the condition progresses. Medical assessment techniques will usually be based upon the measurement of an indirect effect, such as the change in organ function (i.e., lung, liver, kidney) to outside the normal range. In some cases, the direct measurement of the agent (i.e., lead) or a metabolite (for organic compounds) in the blood or urine is useful. Through the use of industrial hygiene surveillance in the field, and occupational medicine surveillance, the classic occupational illnesses that resulted from decades of uncontrolled exposure should largely disappear and be replaced by illnesses that are more speculative, both in diagnosis and cause. In sites with a medical clinic for employees, or offering regular examinations, the medical staff may be the first personnel to receive complaints of symptoms from employees. In well-run sites, procedures will be in place to ensure that this information and other medical concerns are passed to industrial hygienists for action.



Industrial Hygiene Competency 1.3

It is a poor industrial hygiene program that only detects significant exposure after the employees are reporting to the medical clinic. Rather, the industrial hygienist should be anticipating the potential for significant exposure before it occurs, and pressing for the initiation of controls long before signs are identified by the physician. It is one of the cardinal assumptions of industrial hygiene that the general maintenance of exposure to well below the allowable levels should largely prevent the development of serious occupational illness. The industrial hygienist may receive employees' complaints while performing field surveillance or through a formal complaint process. In a well-run program, the complaints will usually be consistent with the current characteristics of the work place. In some cases, however, employee complaints or concerns may reveal exposure situations unknown to industrial hygiene. Investigation of work places may also reveal the failure of controls previously believed to be adequate and taken for granted. Whether receiving complaints or information face to face, through medical, or through written complaint, it is important that the industrial hygienist keep an open mind and use his or her imagination in evaluating the employee observation. Site visits by industrial hygiene staff will usually be educational, and may reveal the possibility of significant exposure that should be controlled.

4. Suggested Exercises

Please refer to Scenarios 1, 4, 9, and 10 in the Scenario section of this document.